

Supplemental Poverty Measure: Alternative Geographic Adjustments

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DRB-FY19-ROSS-B0121

May 20, 2019

This presentation was developed to promote research and advancements in our understanding of poverty measurement. In that spirit and to encourage discussion and thoughtful feedback at early stages of our work, this paper has undergone a more limited review than official Census Bureau reports. All views and any errors are solely those of the author and do not necessarily reflect any official position of the Bureau. All comparative statements in this presentation have undergone statistical testing, and, unless otherwise noted, all comparisons are statistically significant at the 10 percent significance level. Do not cite or distribute without author permission.

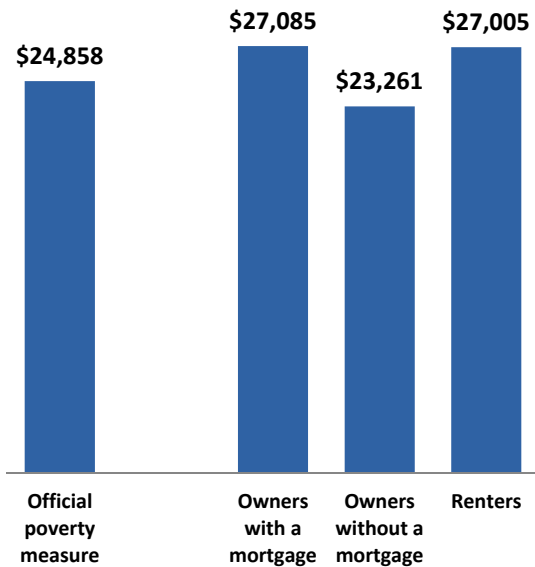
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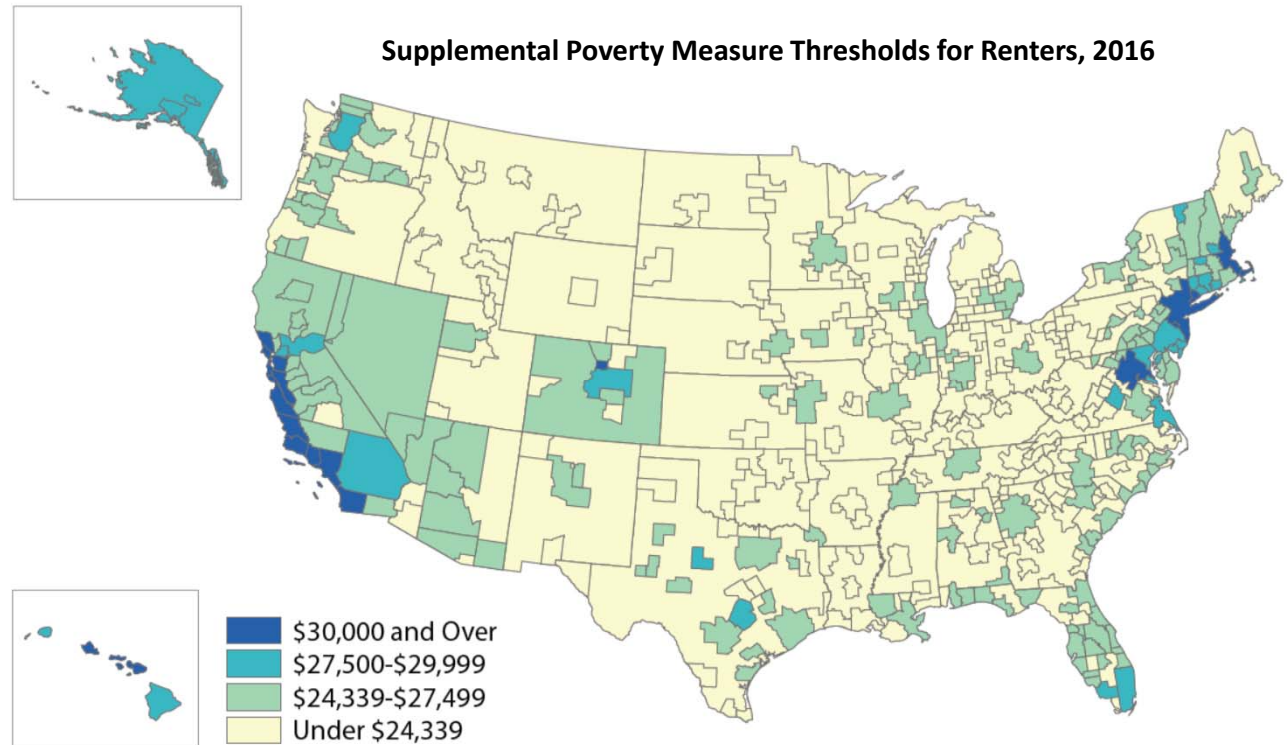
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Official and SPM Thresholds for Units with Two Adults and Two Children

Supplemental Poverty Measure
Thresholds, 2017



Supplemental Poverty Measure Thresholds for Renters, 2016



Median Rent Index

$$\text{Threshold}_{ijt} = [(\text{HousingShare}_t \times \text{MRI}_{ij}) + (1 - \text{HousingShare}_t)] \times \text{Threshold}_t$$

i = state

j = specific metro area, other metro or nonmetro area

t = tenure: owner with mortgage, owner without a mortgage, renter

HousingShare = percent of threshold represented by housing and utilities which ranges from 40 to 50 percent of total expenditures, depending on tenure status

MRI = Median Rent Index

Threshold = national average dollar value for income below which consumer units are considered in poverty

Washington DC vs. Nonmetro Mississippi

2017– Two Adults Two Children - Renter	Washington, DC	Mississippi Nonmetro Areas
Official Poverty Threshold	\$24,858	\$24,858
SPM Threshold: Renters	\$27,005	\$27,005

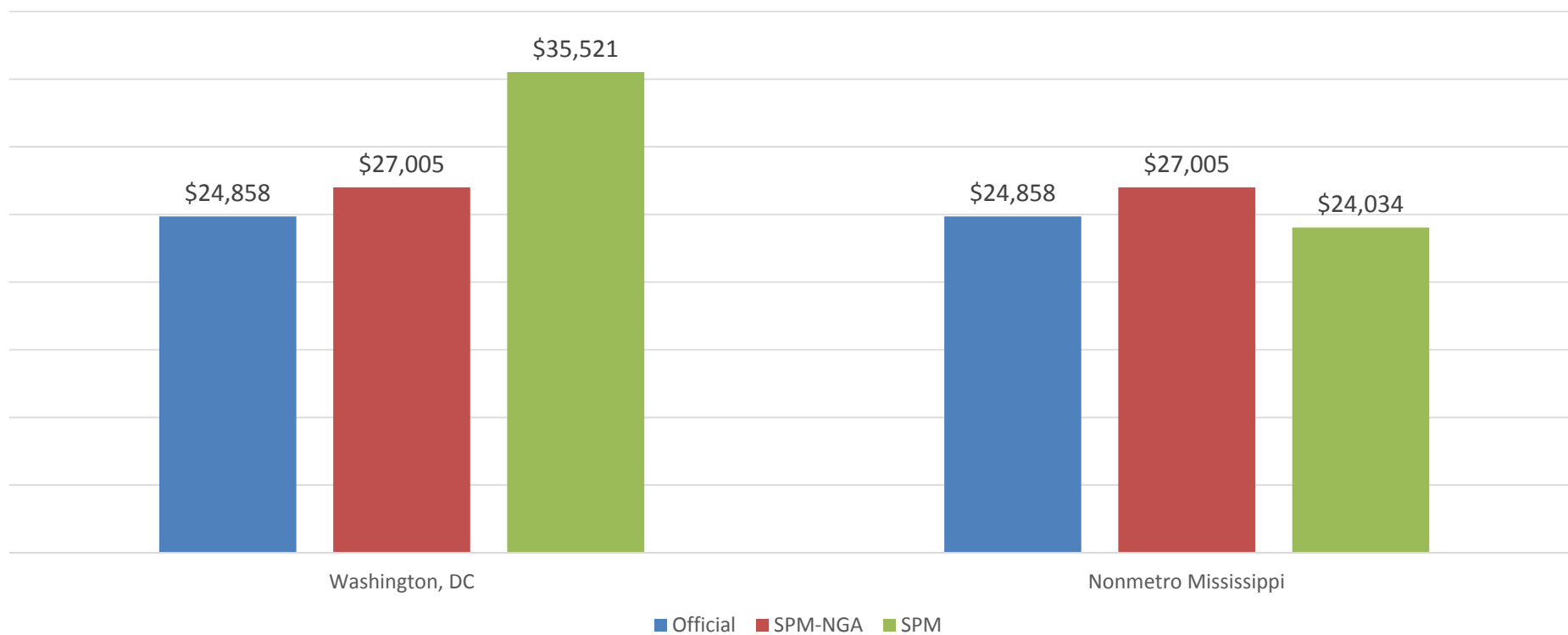
Washington, DC vs. Nonmetro Mississippi

2017 – Two Adults Two Children - Renter	Washington DC	Mississippi Nonmetro Areas
Official Poverty Threshold	\$24,858	\$24,858
SPM Threshold: Renters	\$27,005	\$27,005
Rent-based Index Using Median Rent Index (MRI)	\$1,297/972=1.63	\$598/972=0.78
Apply to Only Housing Portion of Thresholds	50%*1.63+50%*1.0	50%*0.78+50%*1.0
MRI Index	1.32	0.89

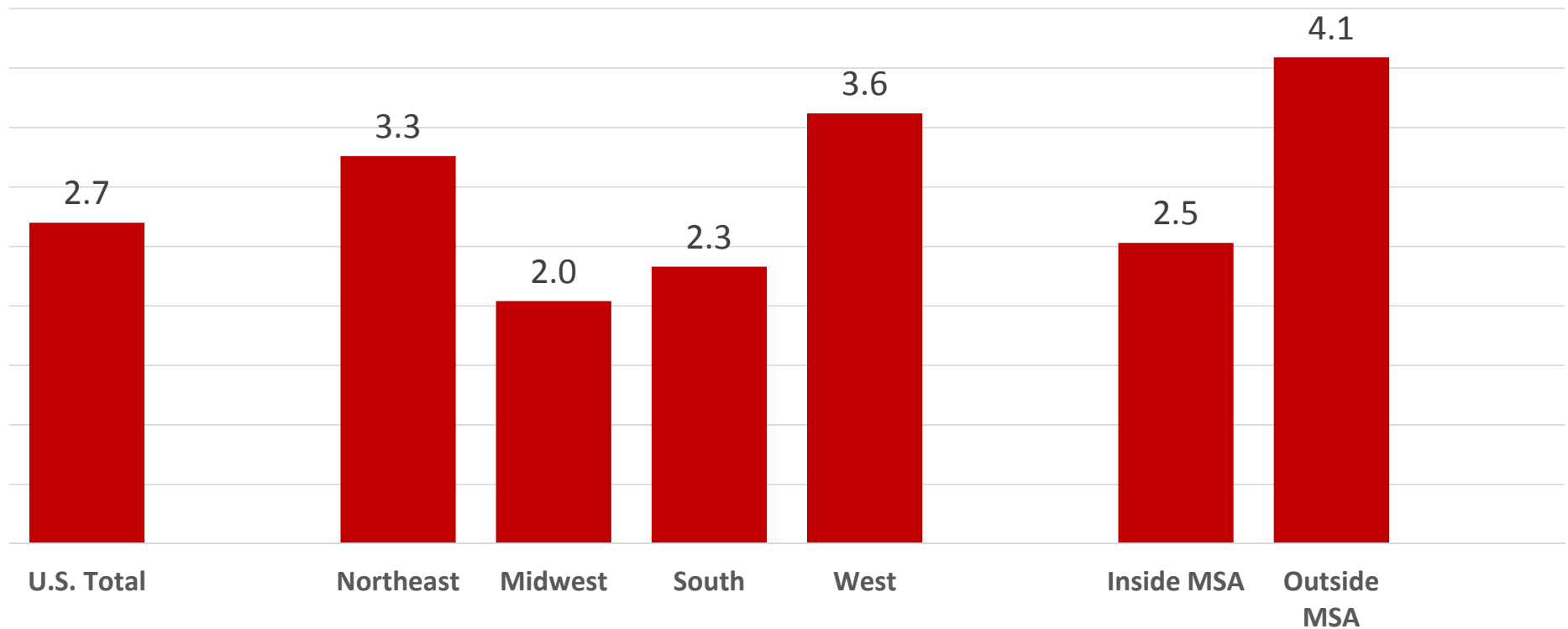
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Rent-based Index Using Median Rent Index (MRI)	\$1,297/972=1.63	\$598/972=0.78
Apply to Only Housing Portion of Thresholds	50%*1.63+50%*1.0	50%*0.78+50%*1.0
Median Rent Index (MRI)	1.32	0.89
Adjusted SPM Threshold	\$35,512	\$24,034

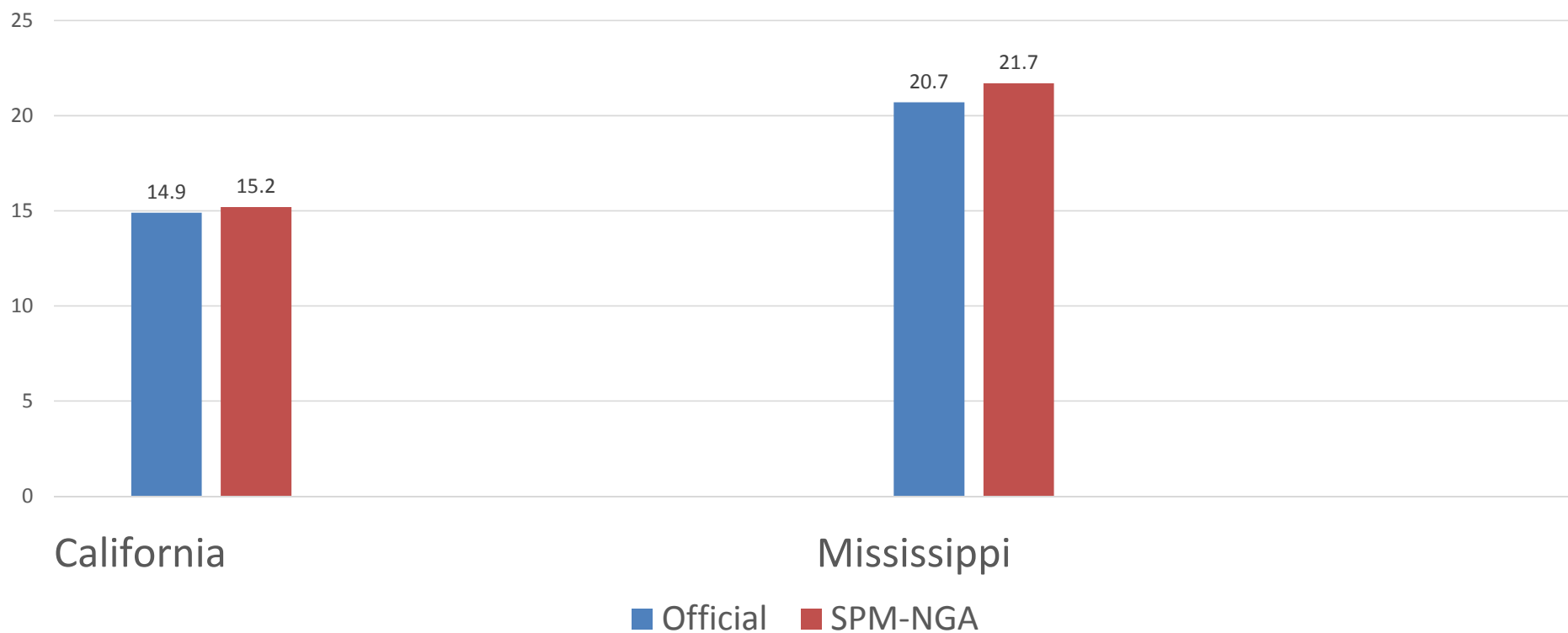
Two Adult, Two Child Thresholds: Renters



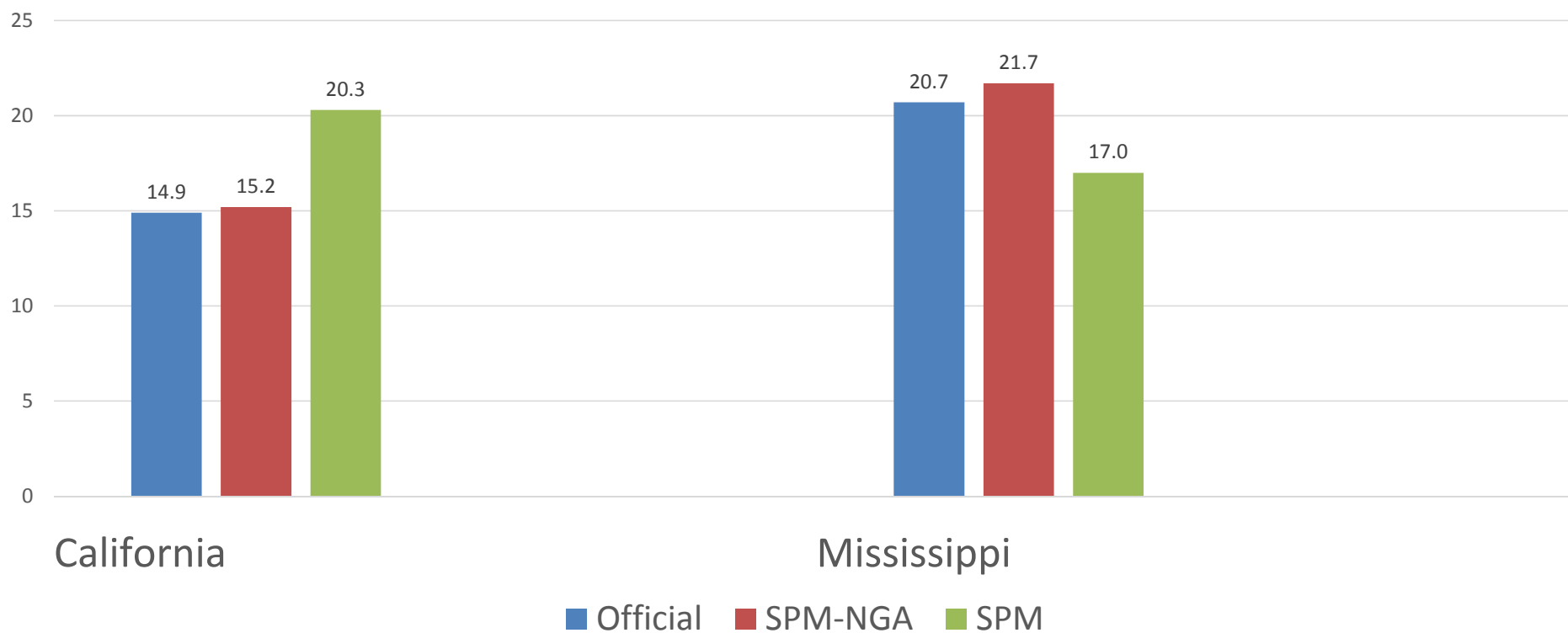
Percent of Individuals with Change in Poverty Status Due to the Geographic Adjustments



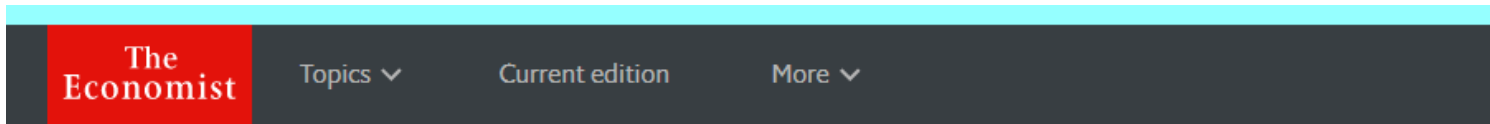
Comparing Poverty Rates by Adjustment Mechanism



Comparing Poverty Rates by Adjustment Mechanism



Media likes to focus on state changes



Poverty in California

Why one of America's richest states is also its poorest



Accounting for housing costs, California has nation's highest poverty rate

A new report suggests 19 percent of Californians are impoverished

By **Elijah Chiland** | Sep 14, 2018, 8:25am PDT



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Concerns with the MRI Methodology

- Adjusts only the housing portion of the thresholds
 - Regional Price Parities produced by BEA could adjust the entire threshold
 - BUT they include many expenditure items not included in the SPM thresholds and therefore give a much smaller weight to housing – see Renwick, Aten, Figueroa, and Martin (2014)
 - Custom RPPs using only Food, Apparel and Rent (FAR RPPs)
 - Adjustments using FAR-RPPS are even “stronger” than using the MRI’s – see Renwick, Figueroa and Aten (2017)
- Simple medians may not capture differences in housing quality
 - Using housing component of the RPPs – based on a hedonic regression rather than a simple median – BUT lose the simplicity of the median
- Adjust the MRI index to recognize amenities that may reduce the impact of housing costs on economic well-being

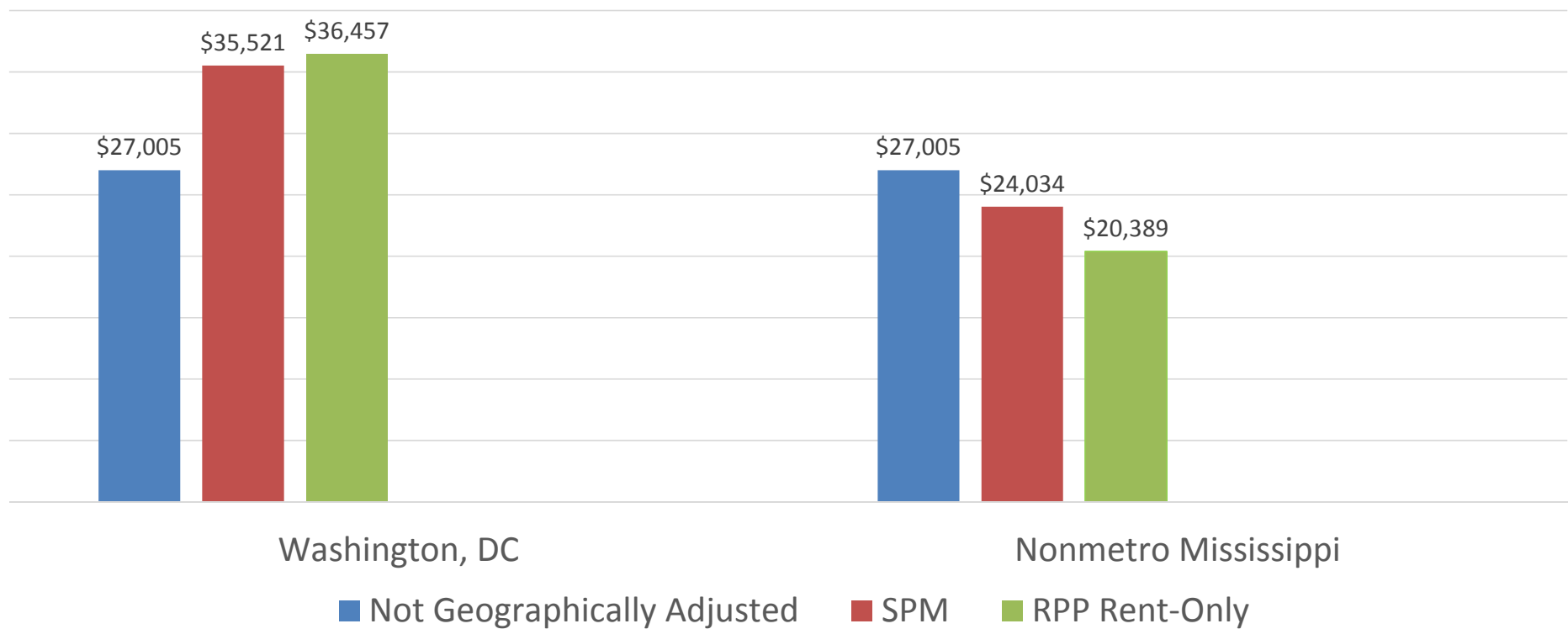
Regional Price Parities (RPPs)

- Spatial price indexes produced by the Bureau of Economic Analysis to measure price level differences across regions
- Stage One – price and expenditures inputs collected by the BLS CPI program and the CE – 38 urban areas (weights available for 38 urban areas plus 4 rural regions)
- Stage Two – combined with data from the ACS on housing costs to calculate index values for all metro areas
- Index values applied to the entire threshold

Washington, DC vs. Rural Mississippi

2017– Two Adults Two Children - Renter	Washington, DC	Mississippi Nonmetro Areas
Official Poverty Threshold	\$24,858	\$24,858
SPM Threshold: Renters	\$27,005	\$27,005
Rent Index from Regional Price Parities	1.70	.51
Apply to Only Housing Portion of Thresholds	$50\% \times 1.70 + 50\% \times 1.0$	$50\% \times 0.51 + 50\% \times 1.0$
Index using RPP Rents	1.35	.76
Adjusted SPM Threshold	\$36,457	\$20,389

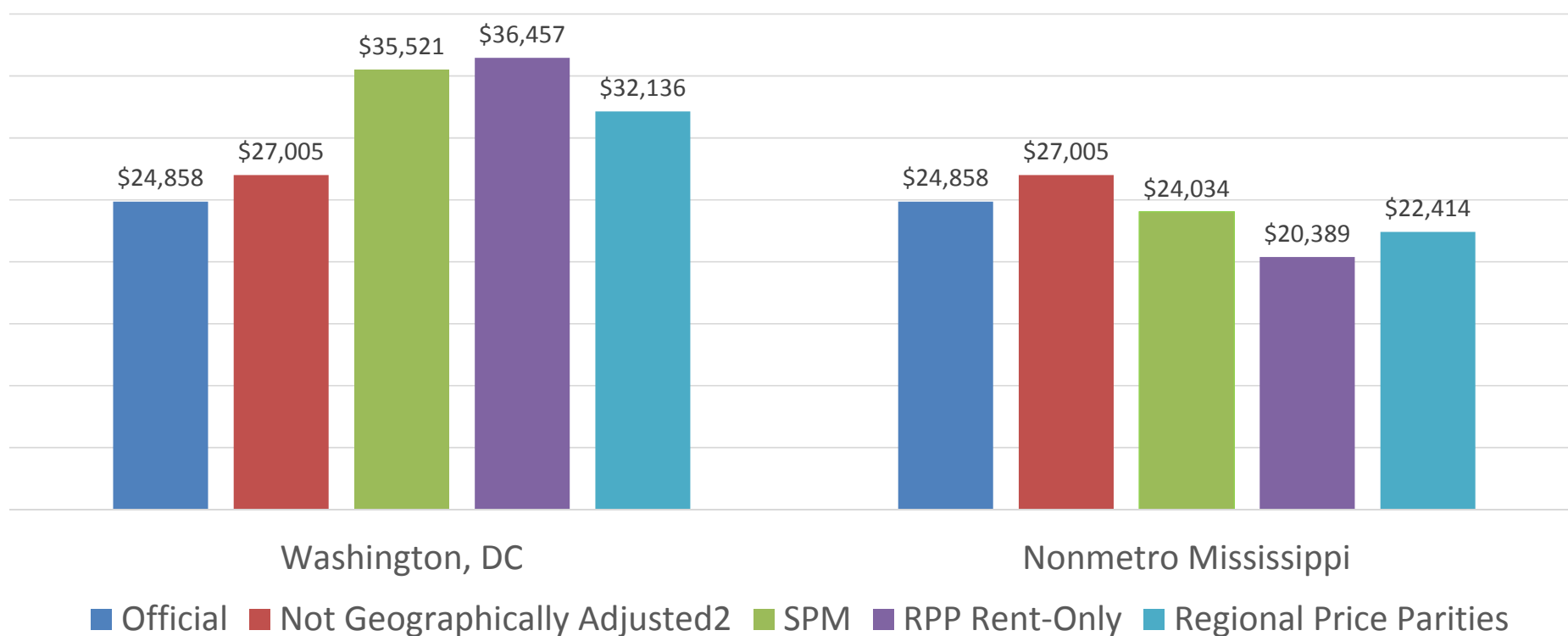
2017 Two Adult, Two Child Thresholds: Renters



Washington DC vs Nonmetro Mississippi

2017 – Two Adults Two Children	Washington, DC	Mississippi – outside metro area
Official Poverty Threshold	\$24,858	\$24,858
SPM Threshold: Renters	\$27,005	\$27,005
RPP Index – Broad based	1.19	.83
Adjusted SPM Threshold – Broad Based	\$32,136	\$22,414

2017 Two Adult, Two Child Thresholds: Renters



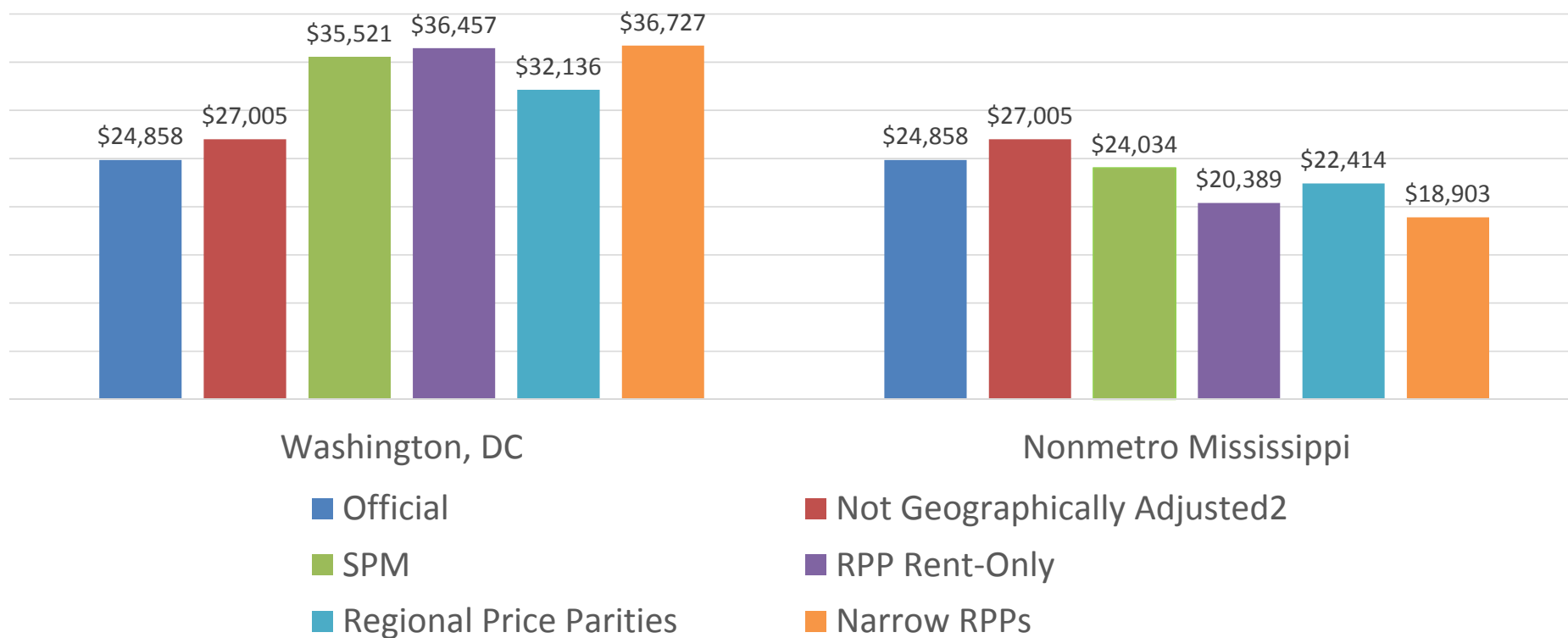
Regional Price Parities – Narrowly Defined or FAR

- 2014 analysis examined differences between the MRI adjustments and the RPP adjustments.
- Concern that this index includes many goods and services not in the SPM thresholds. Differences in poverty rates driven by differences in expenditure shares.
- BEA developed a special RPP – based solely on Food, Apparel and Rent (FAR).
- One advantage of the FAR RPP is that expenditure shares vary by geography. They do not vary by tenure type.

Washington, DC vs Nonmetro Mississippi

2017 – Two Adults Two Children	Washington, DC	Mississippi – outside metro area
Official Poverty Threshold	\$24,858	\$24,858
SPM Threshold: Renters	\$27,005	\$27,005
RPP Index – Broad based	1.19	.83
Adjusted SPM Threshold – Broad Based	\$32,136	\$22,414
FAR RPP Index	1.36	.70
Adjusted SPM Threshold – FAR RPP	\$36,727	\$18,904

2017 Two Adult, Two Child Thresholds: Renters



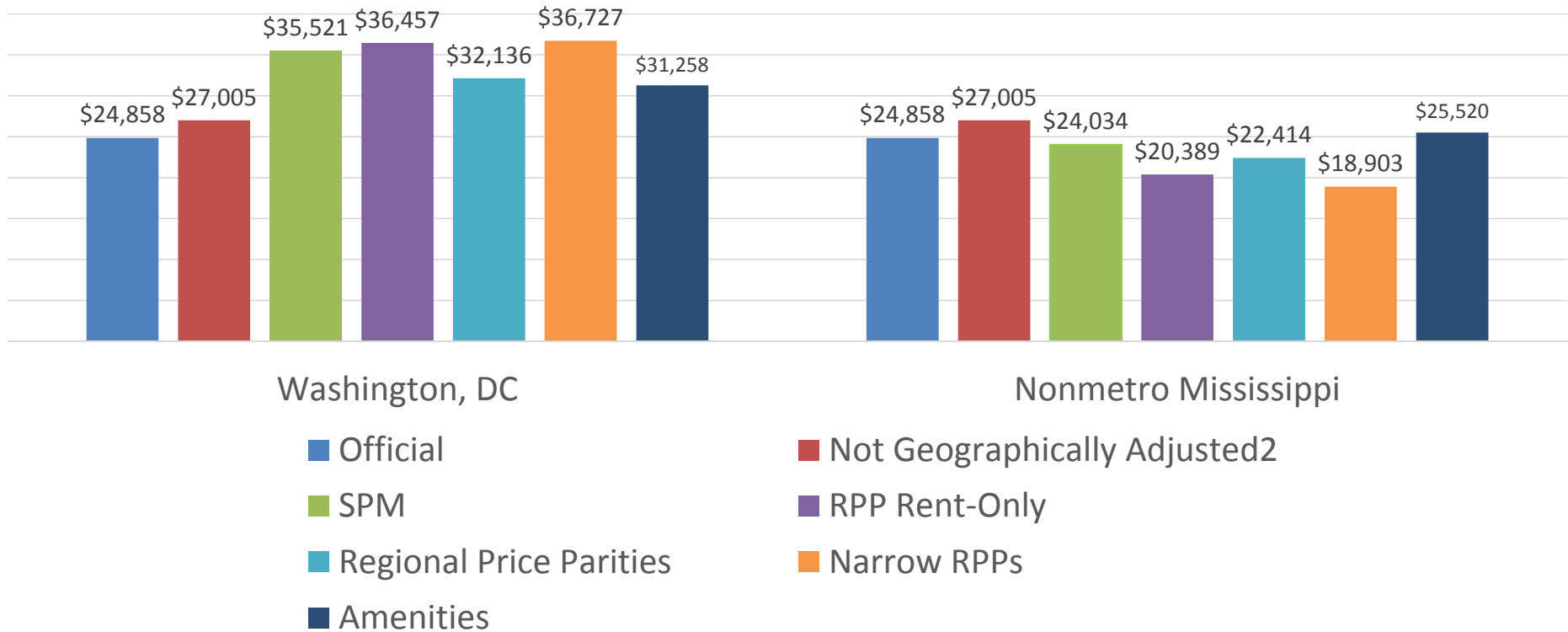
Adjusting for Amenities

- Differences in prices reflect differences in the ability to purchase a given bundle of goods. This may or may not translate into equal quality of life.
- Amenities: nonmarket goods that improve the quality of life.
- MRI will over-adjust poverty thresholds if places with higher median rents also have higher “amenities”. MRI will under-adjust poverty thresholds if places with higher median rents have lower amenities or “dis-amenities”.
- Considerations:
 - Assumes that amenities are not completely capitalized in rents
 - Assumes that these amenities are fungible --- can live in a smaller house because the “weather is so wonderful you can spend more time outside”. Some amenities probably not fungible – “can’t eat the scenery”. Still need enough resources to purchase basic bundle of necessities.
 - Value of amenities may vary across the income distribution
- No clear methodology to incorporate amenities – this analysis arbitrarily cuts the weight of the MRI index in half.

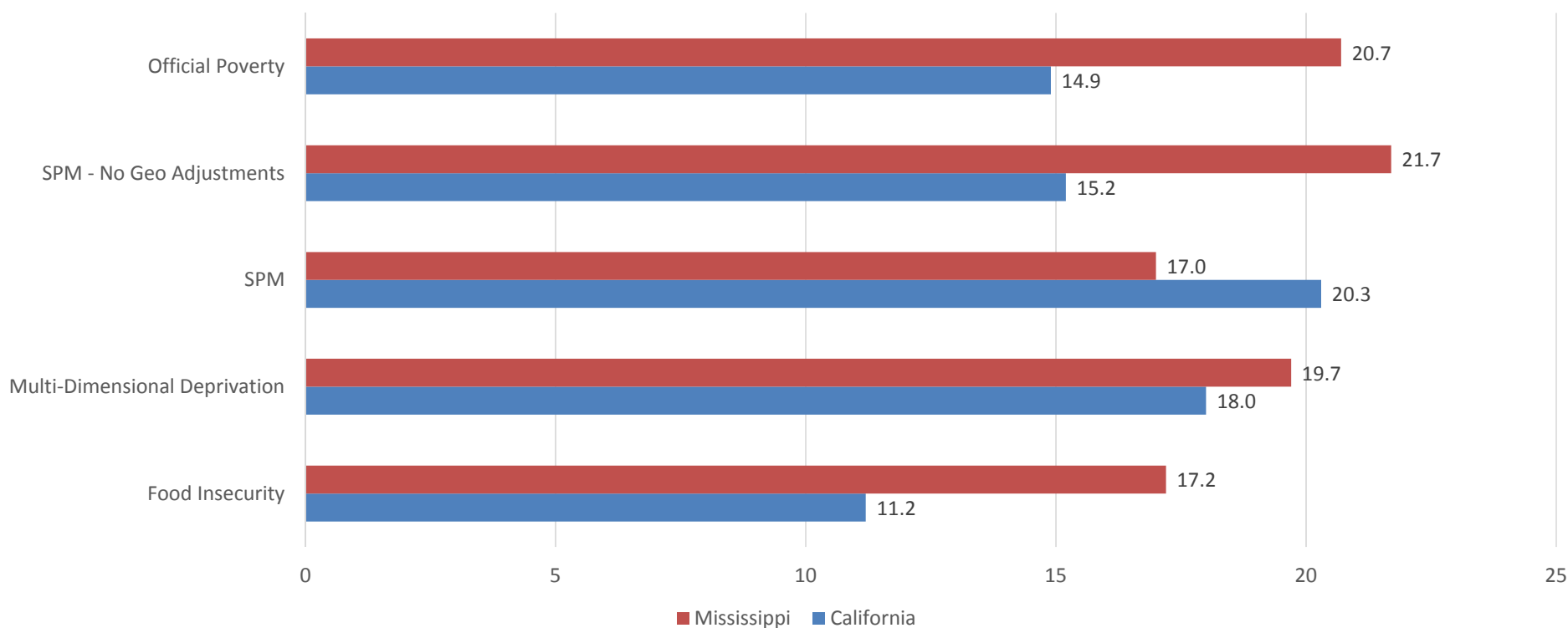
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Rent-based Index Using Median Rent Index (MRI)	\$1,297/972=1.63	\$598/972=0.78
Apply to Only Housing Portion of Thresholds	25%*1.63+75%*1.0	25%*0.78+75%*1.0
Amenities Adjusted Index (AAI)	1.16	0.95
Adjusted SPM Threshold	\$31,258	\$25,520

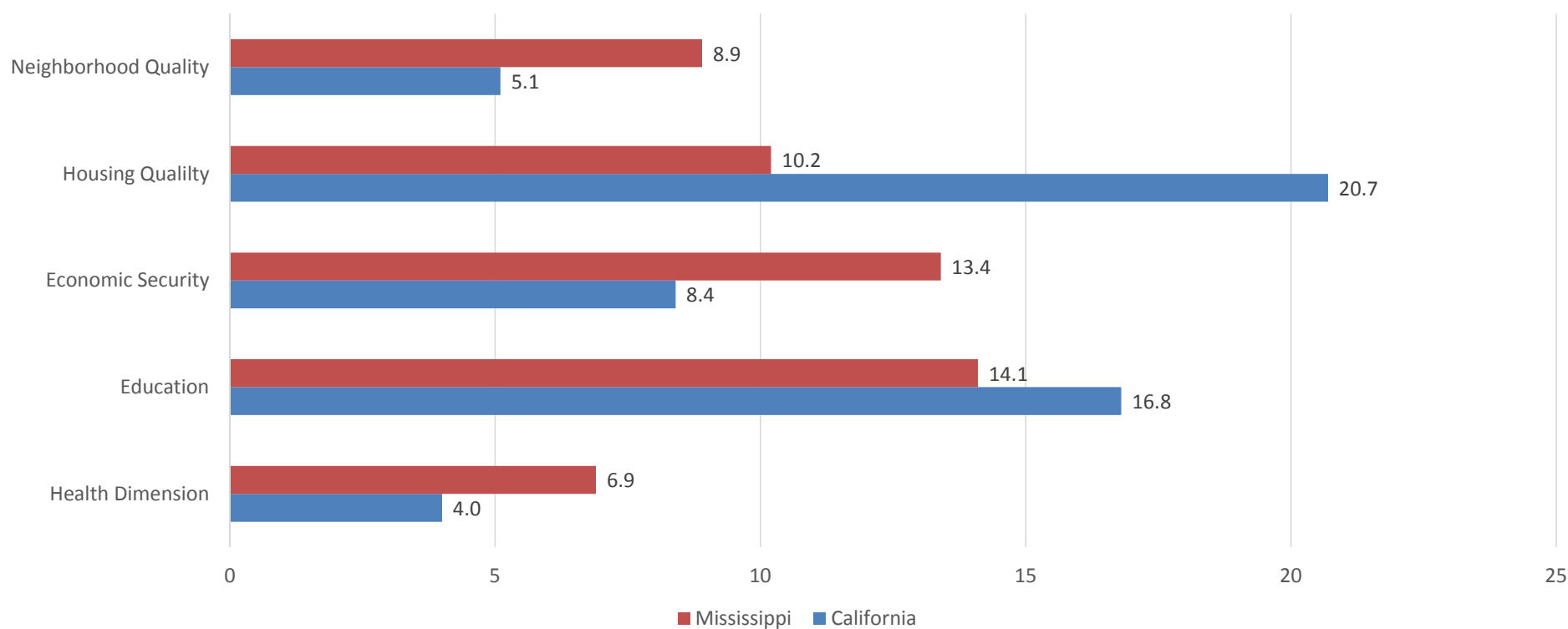
2017 Two Adult, Two Child Thresholds: Renters



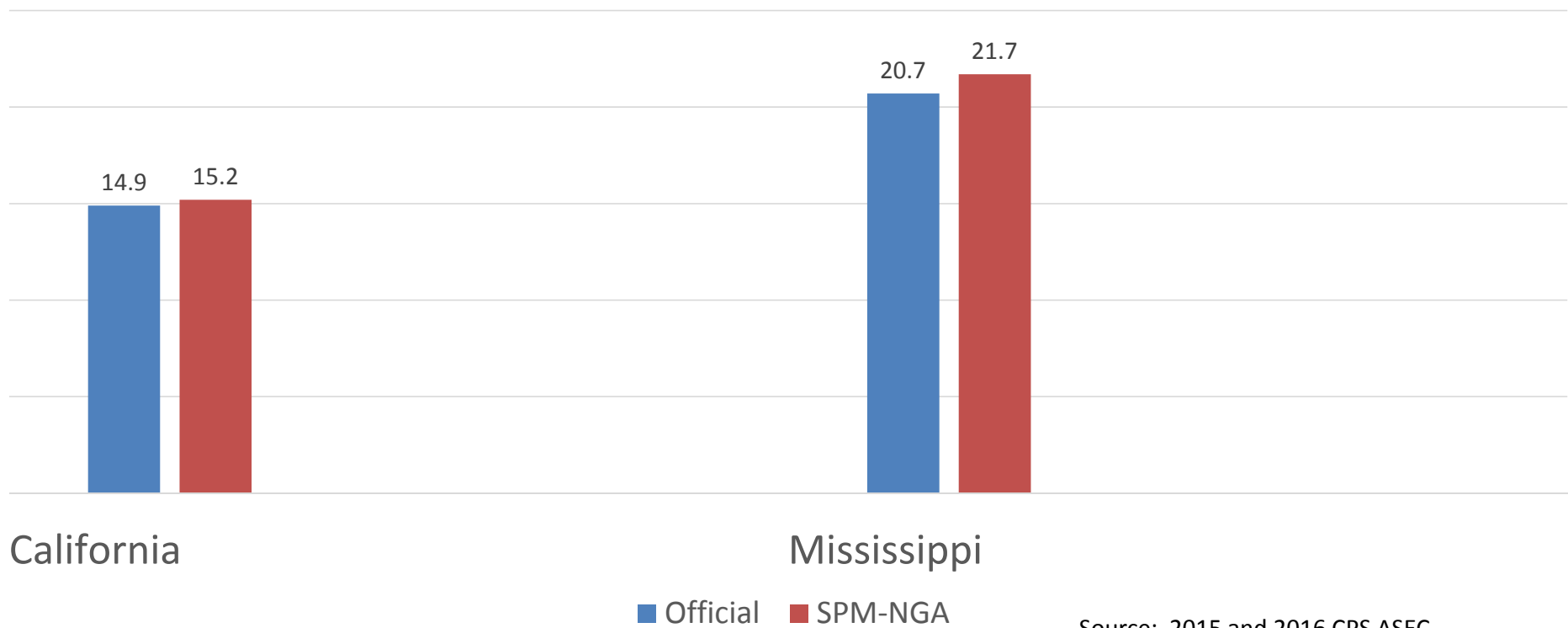
California vs Mississippi: Poverty Rates and Material Deprivation Rates



California vs Mississippi: Deprivation Rates for Specific Dimensions

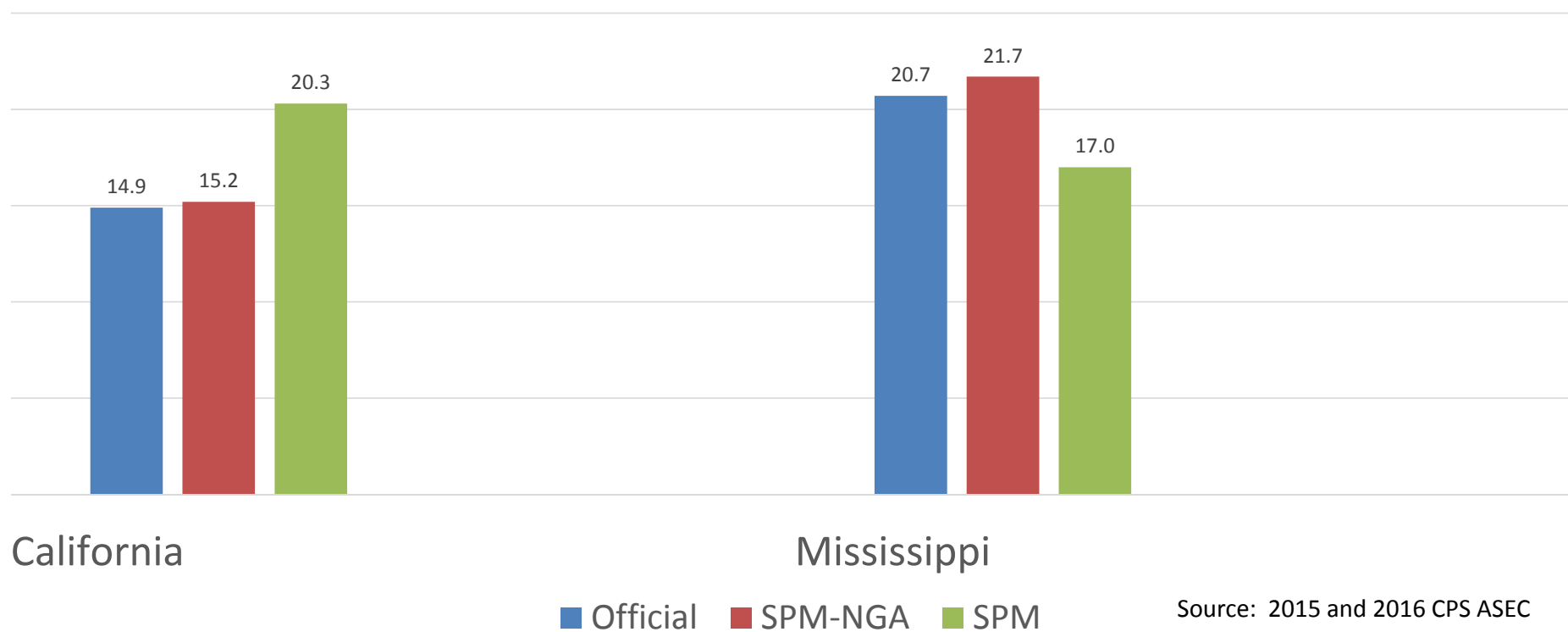


Comparing Poverty Rates by Adjustment Mechanism



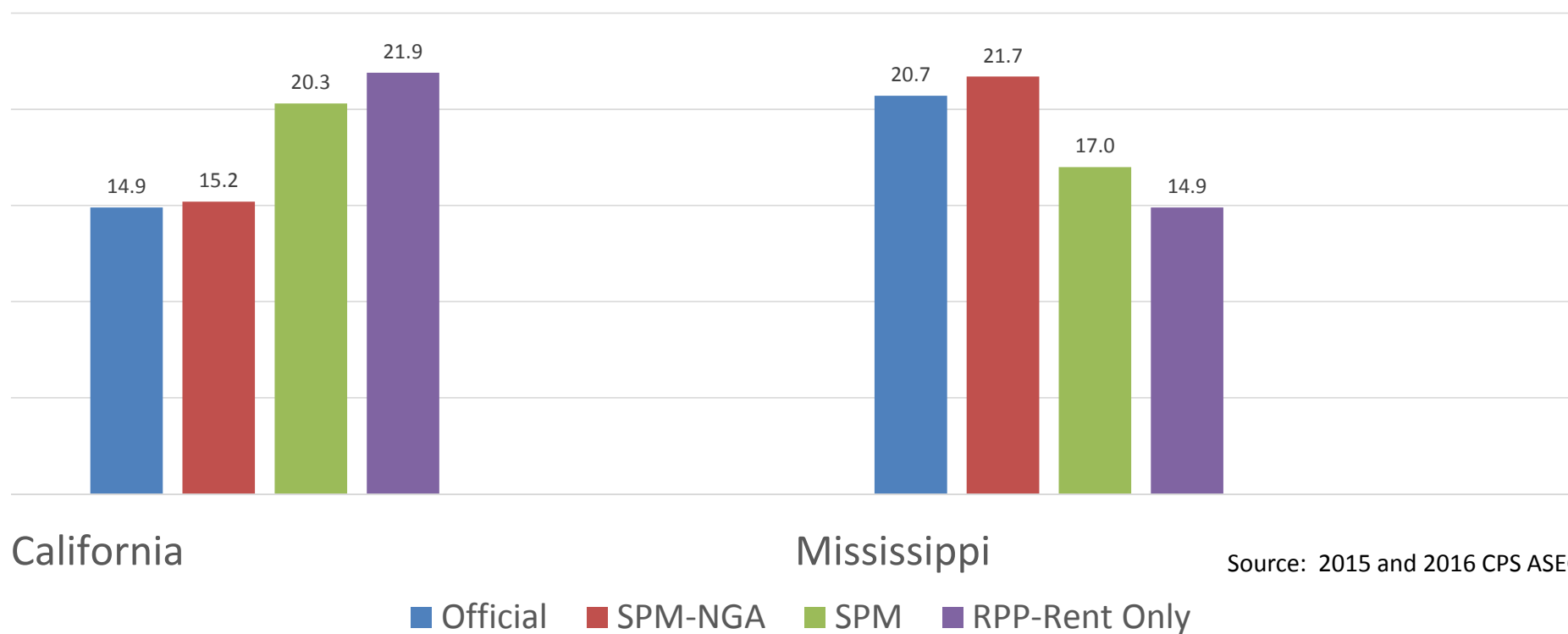
Source: 2015 and 2016 CPS ASEC

Comparing Poverty Rates by Adjustment Mechanism

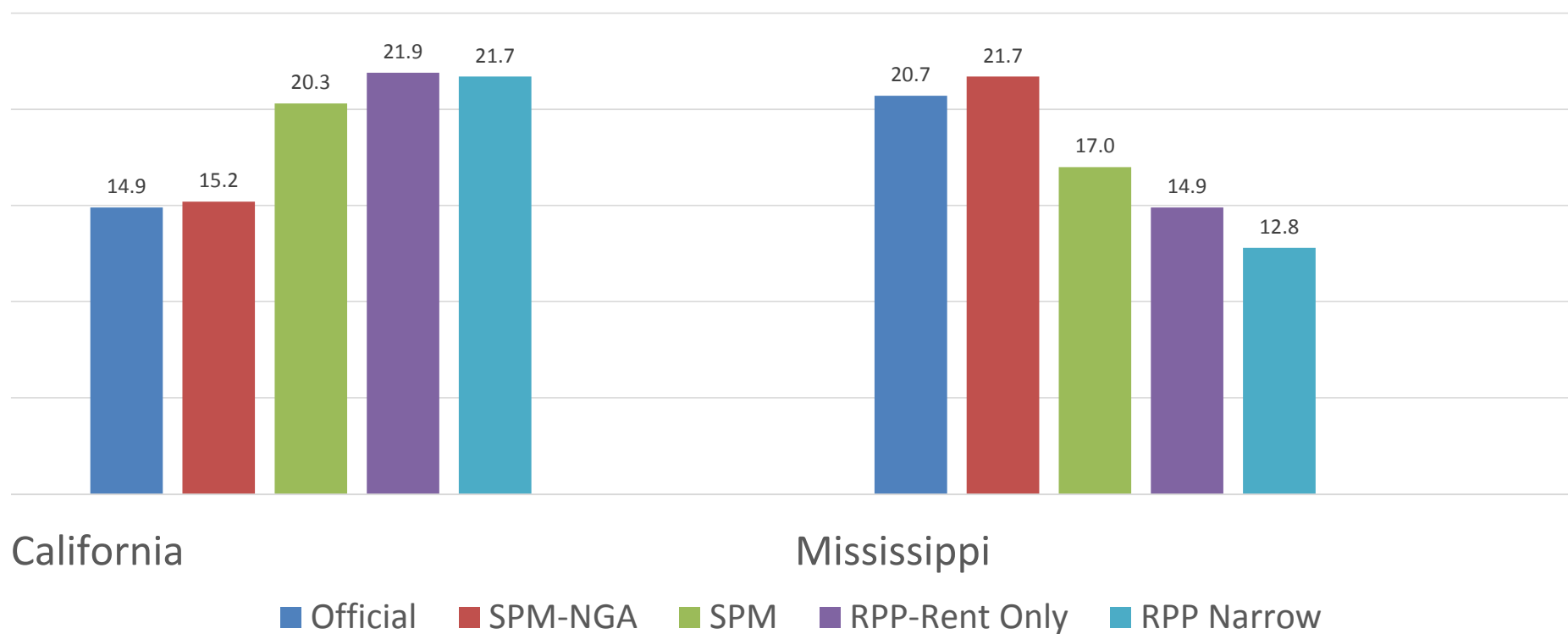


Source: 2015 and 2016 CPS ASEC

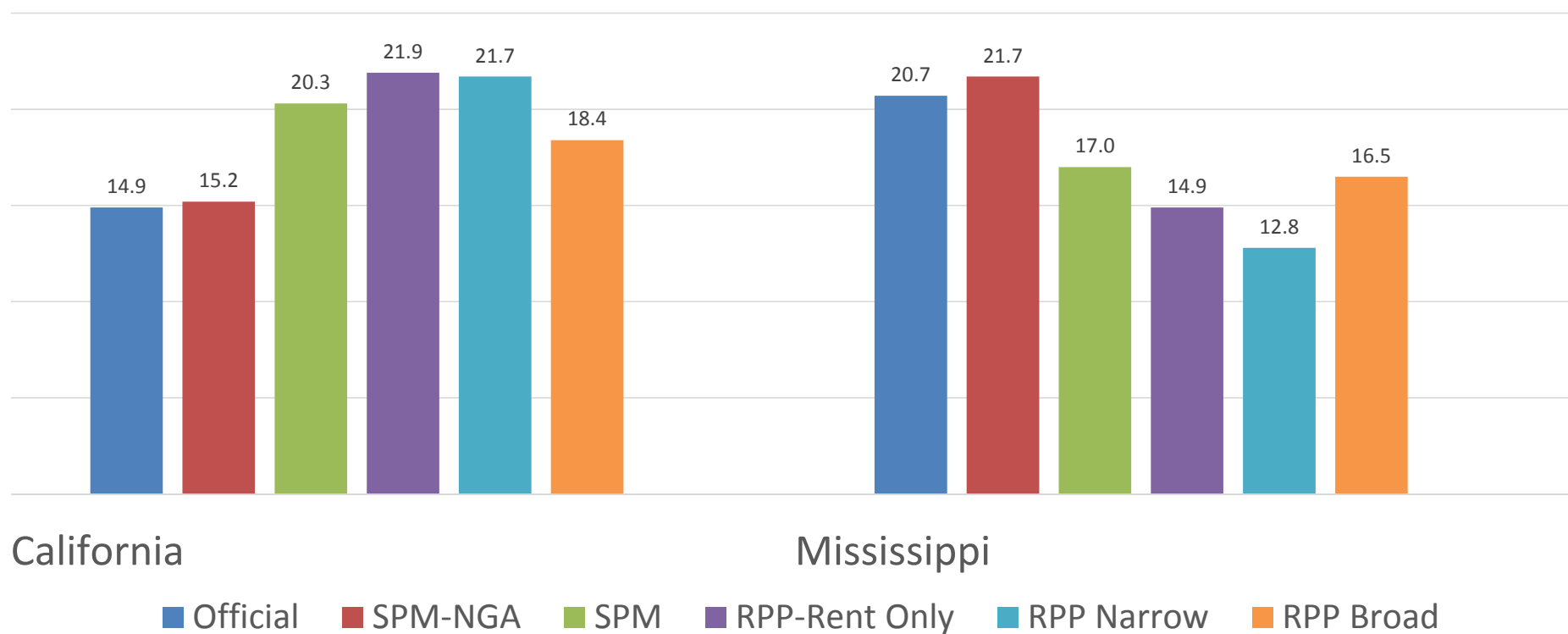
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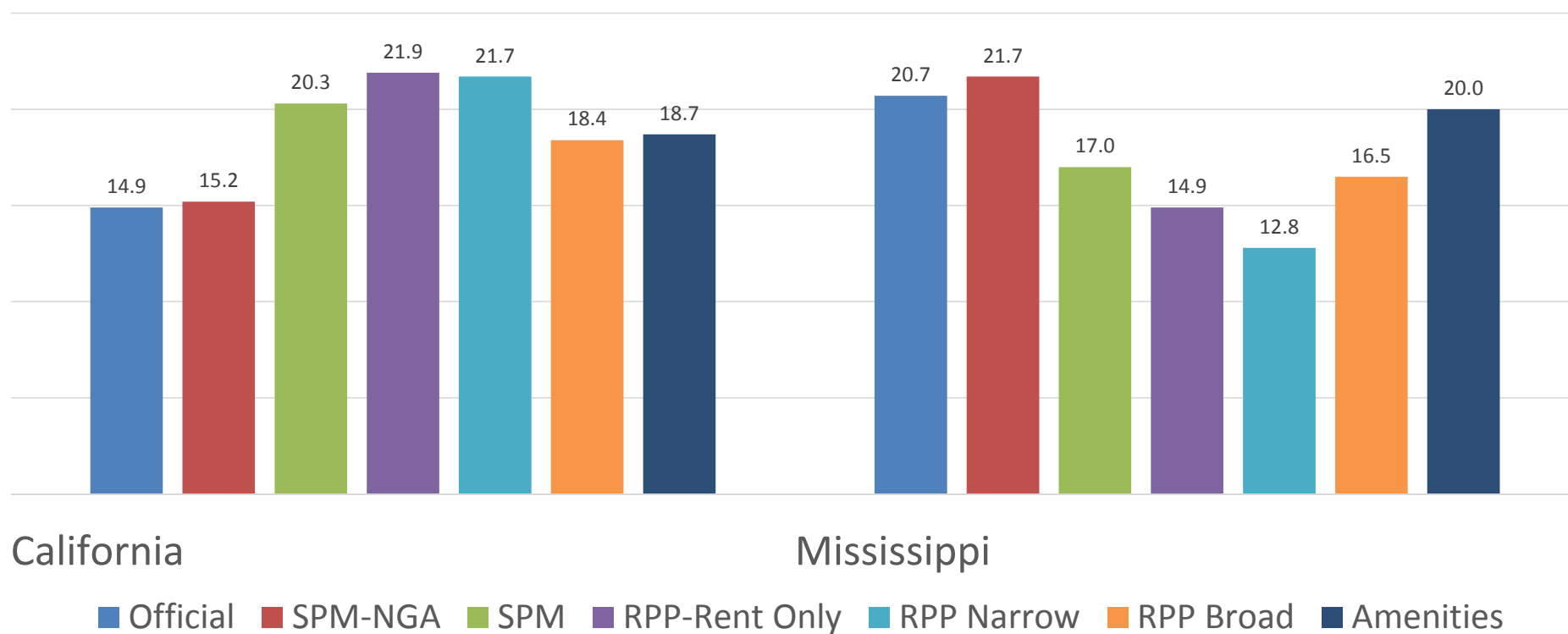
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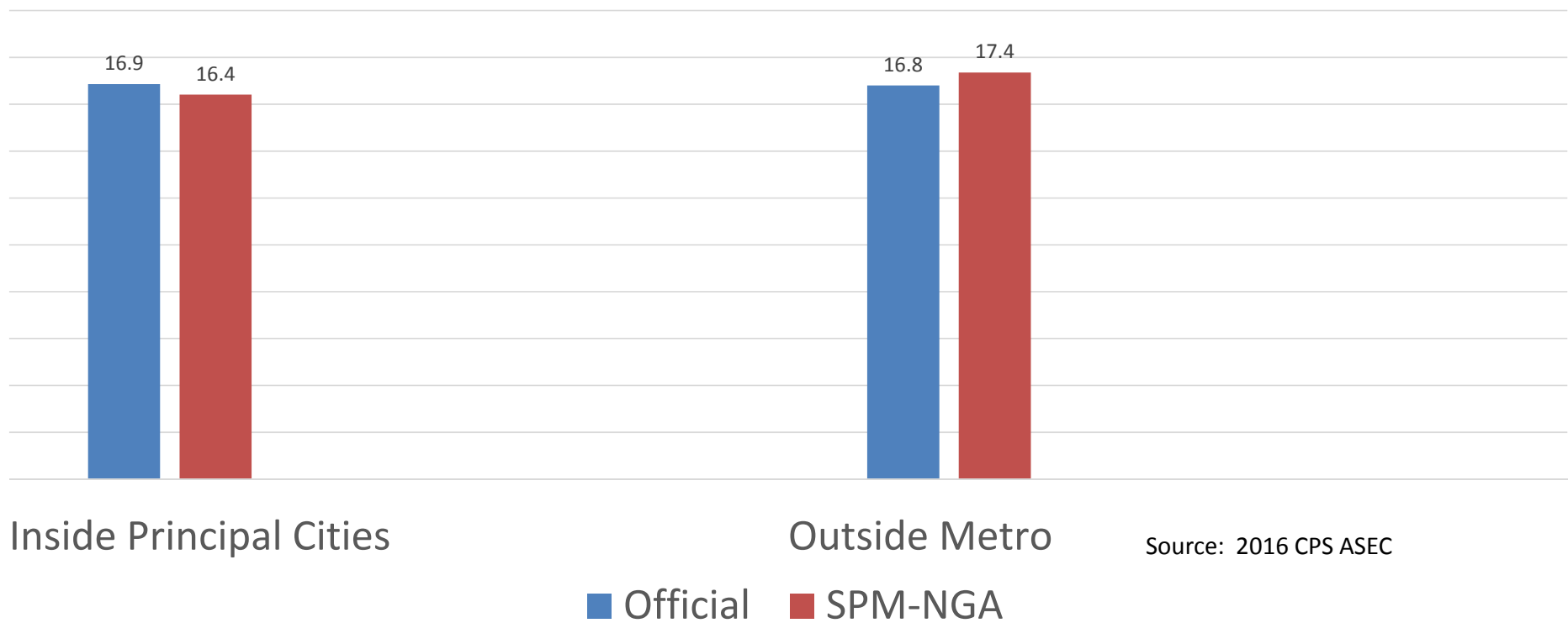
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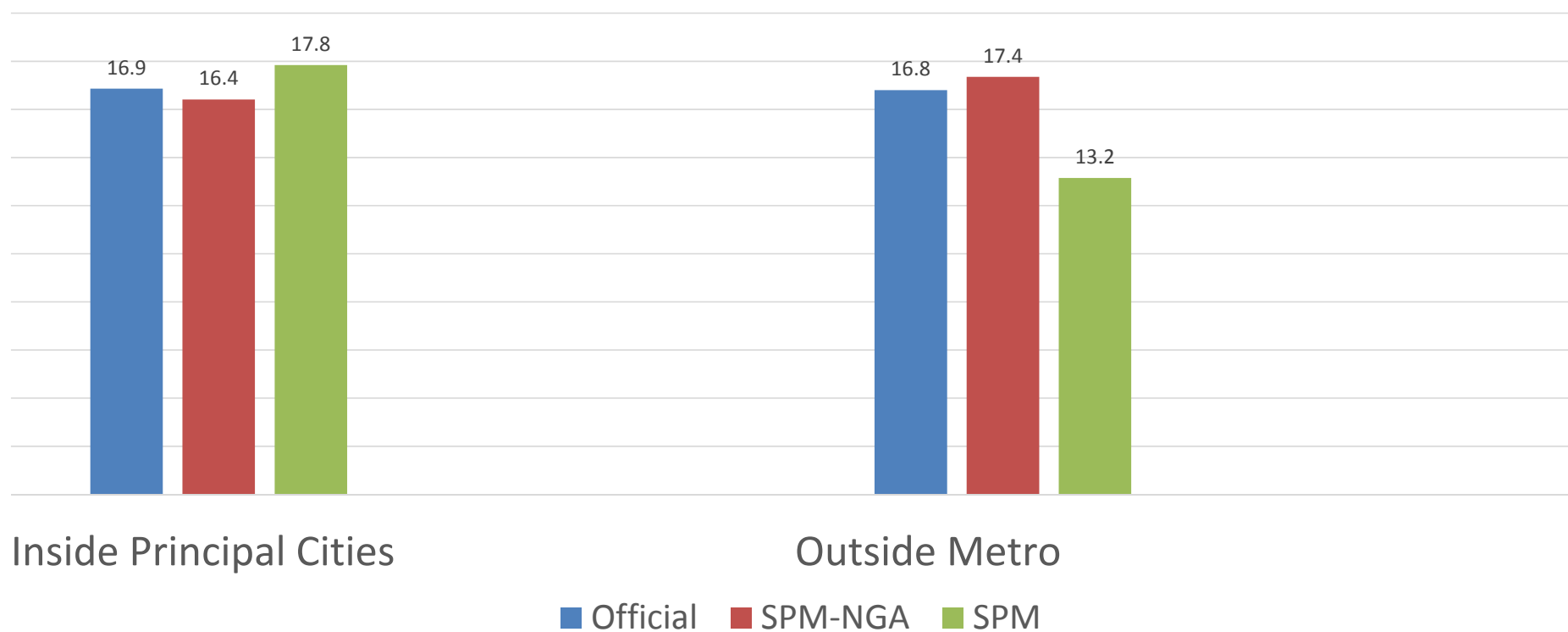


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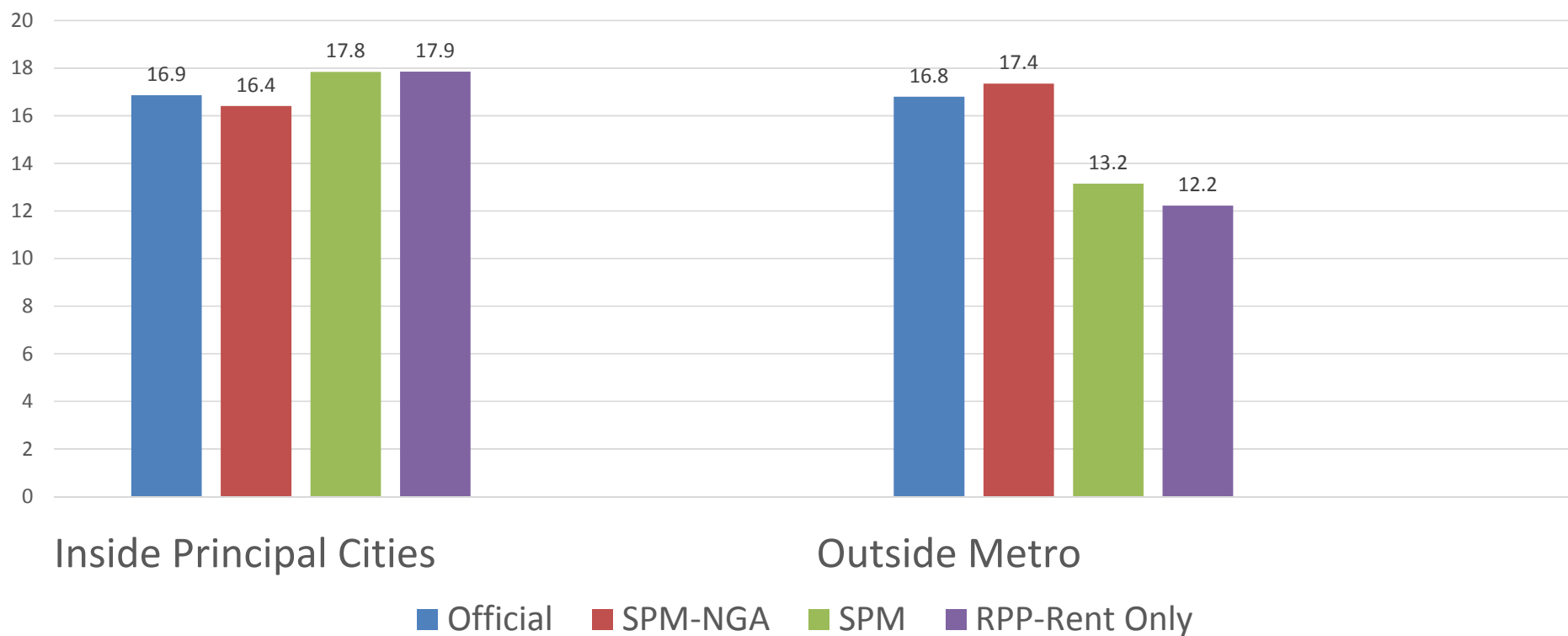


Source: 2016 CPS ASEC

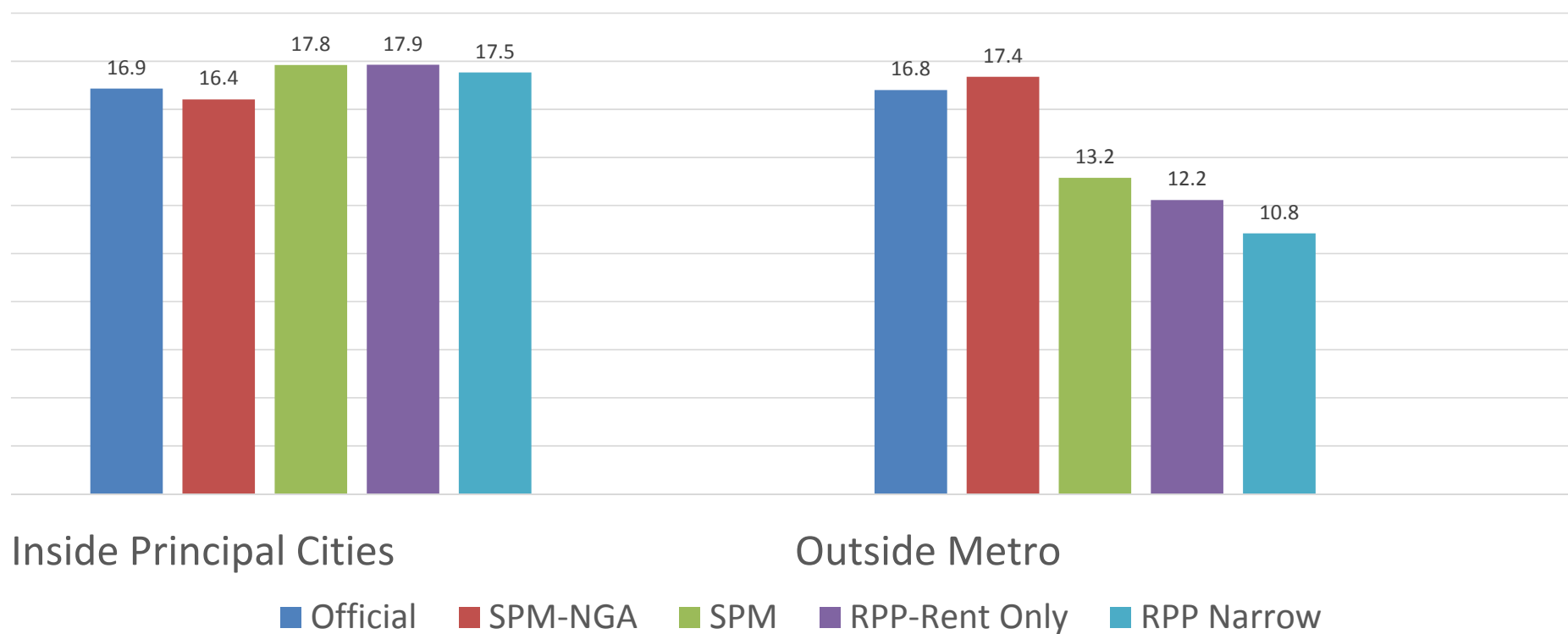
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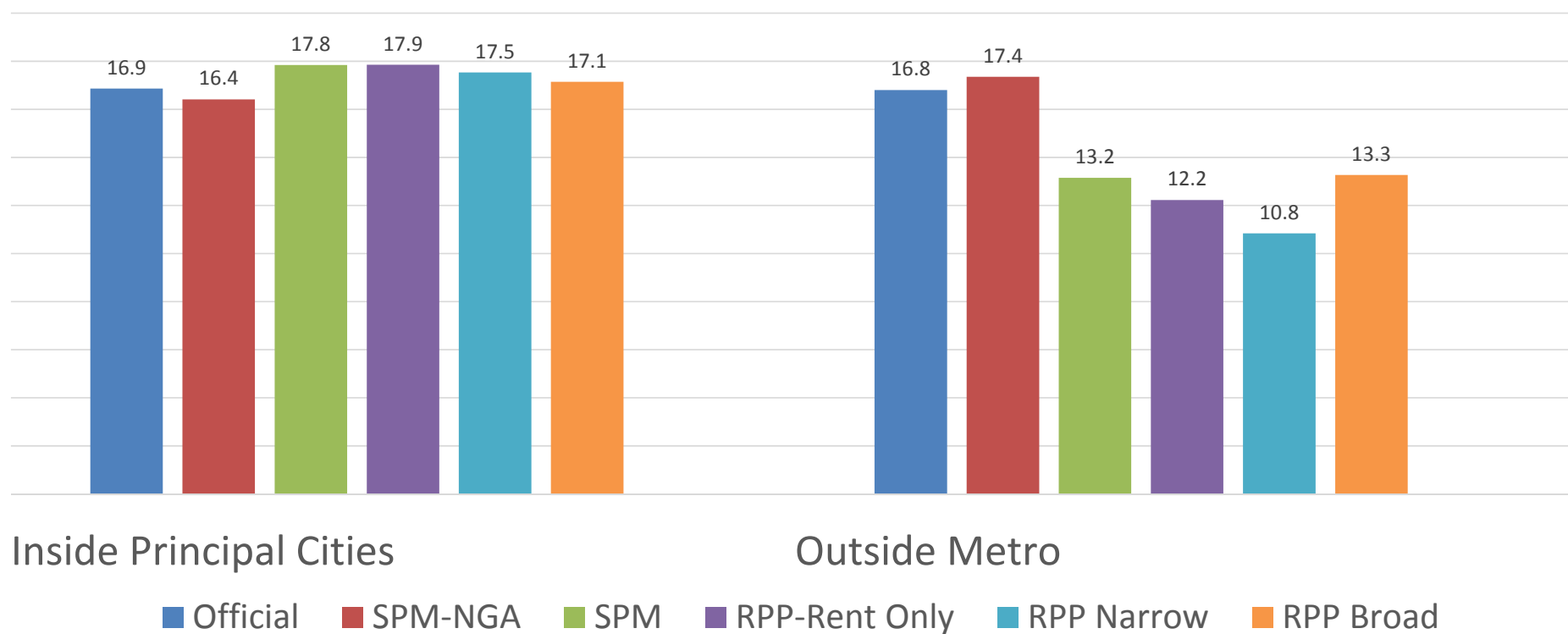
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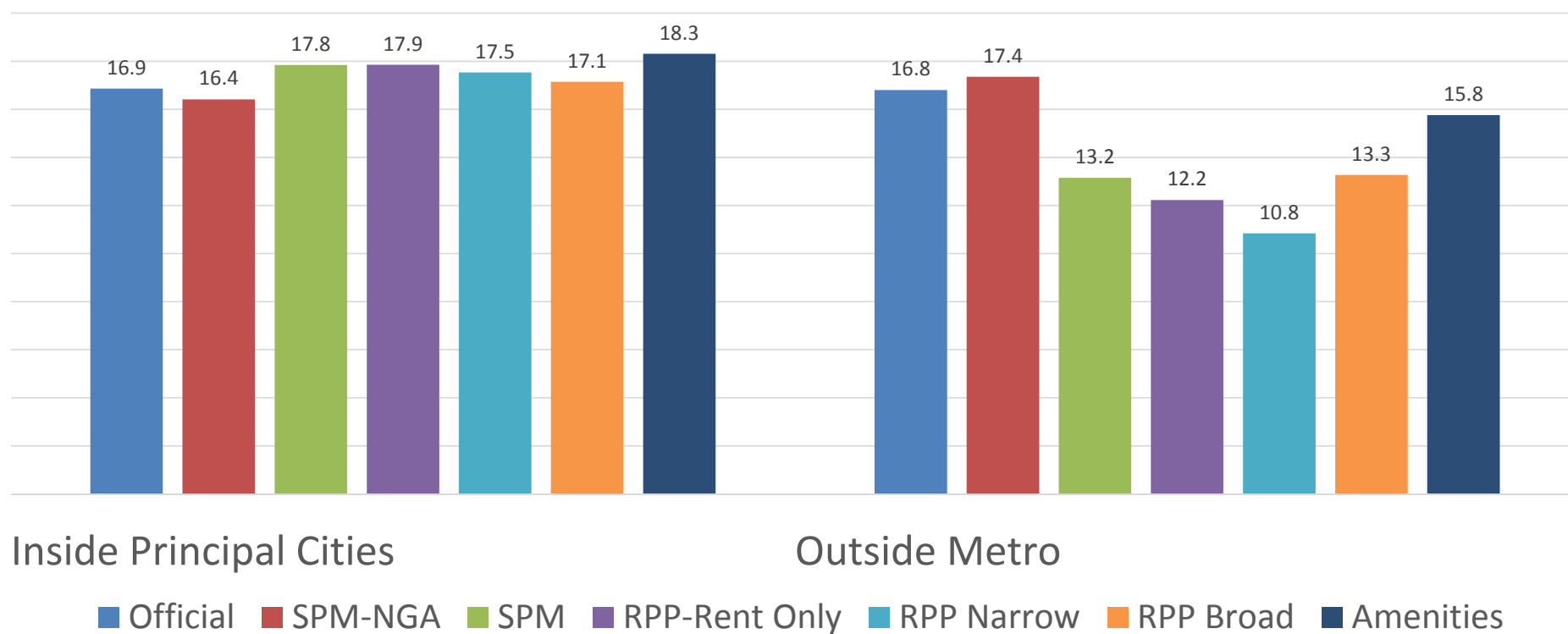
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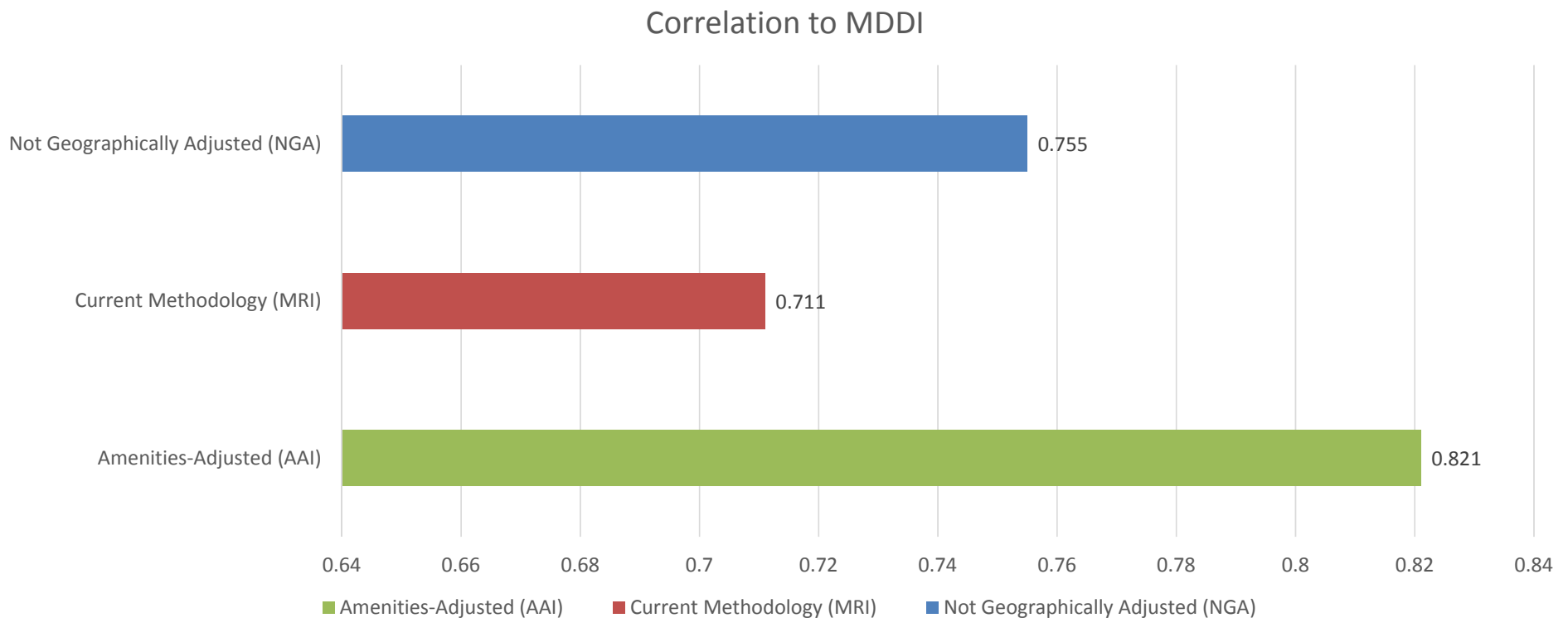
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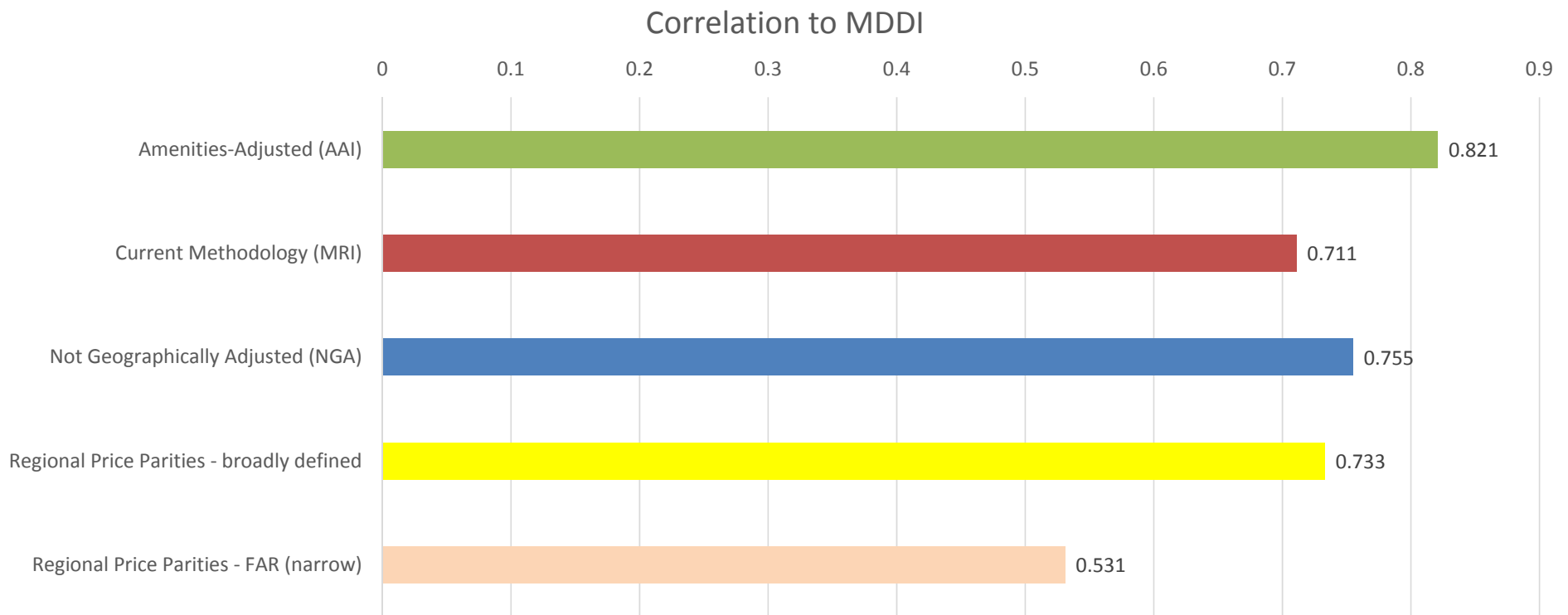
Comparing Poverty Rates by Adjustment Mechanism



Correlation of State Level Poverty Rates to Multi-dimensional Deprivation Index

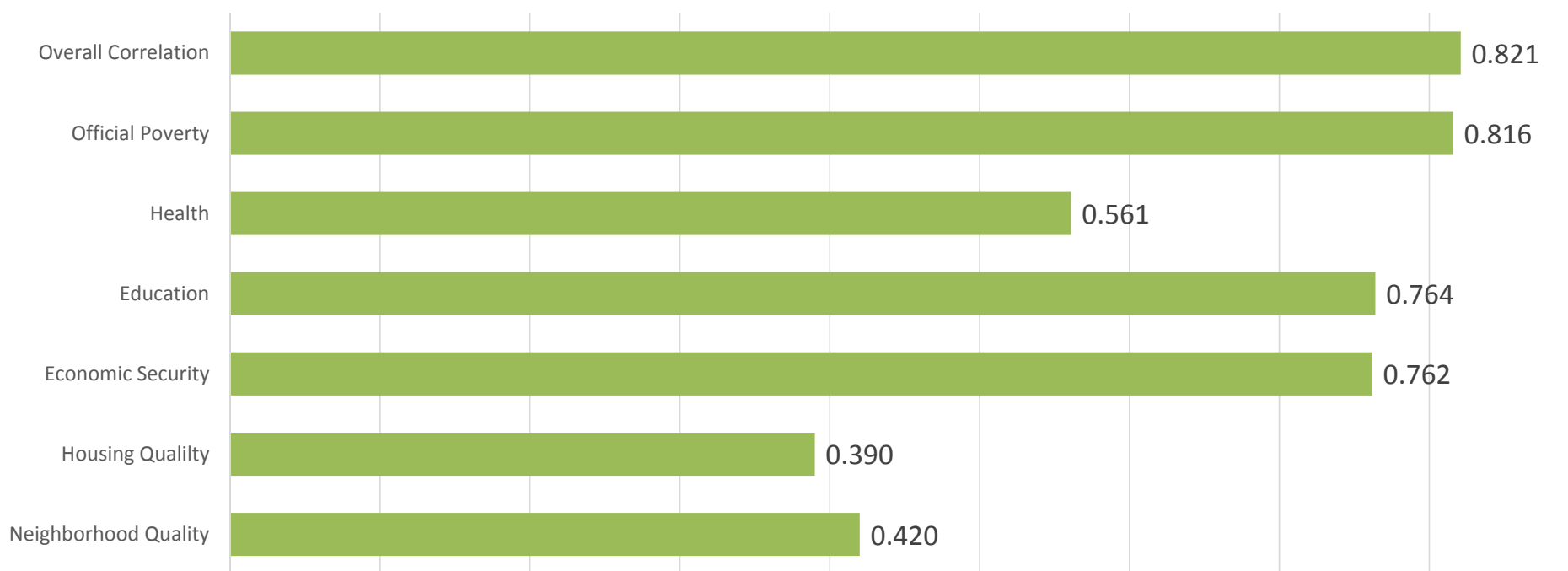


Correlation of State Level Poverty Rates to Multi-dimensional Deprivation Index

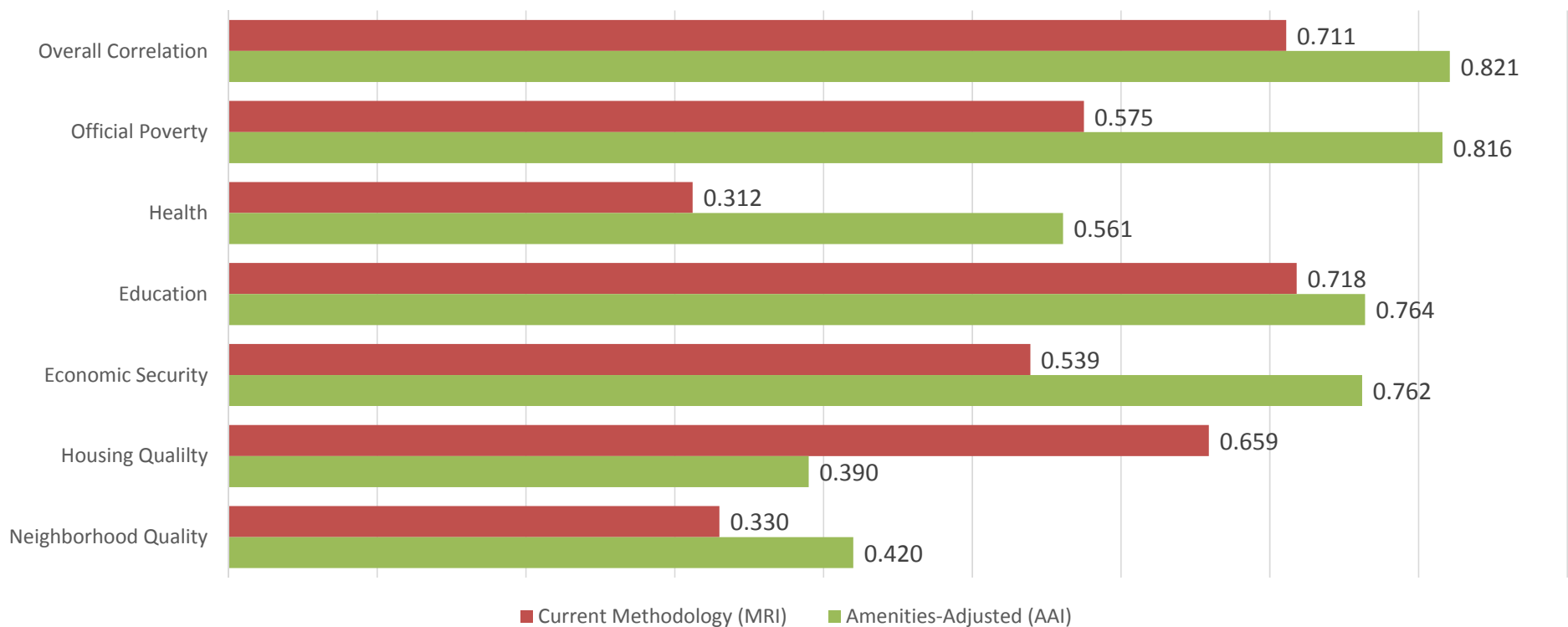


Correlation of State Level Poverty Rates to Multi-dimensional Deprivation Index – Individual Dimensions

Amenities-Adjusted (AAI)



Correlation of State Level Poverty Rates to Multi-dimensional Deprivation Index – Individual Dimensions



Conclusions

- Amenities-adjusted appears to be more highly correlated with the Multi-dimensional Deprivation Index
- Suggests that the MRI index may provide an adjustment that is too strong
- Need for further research to establish a defensible “adjustment” factor
 - Looking at wage/price elasticities – law of one wage
- Open to suggestions as to other mechanisms to incorporate amenities
- Need to test against deprivations at the individual level – perhaps using the Survey of Income and Program Participation

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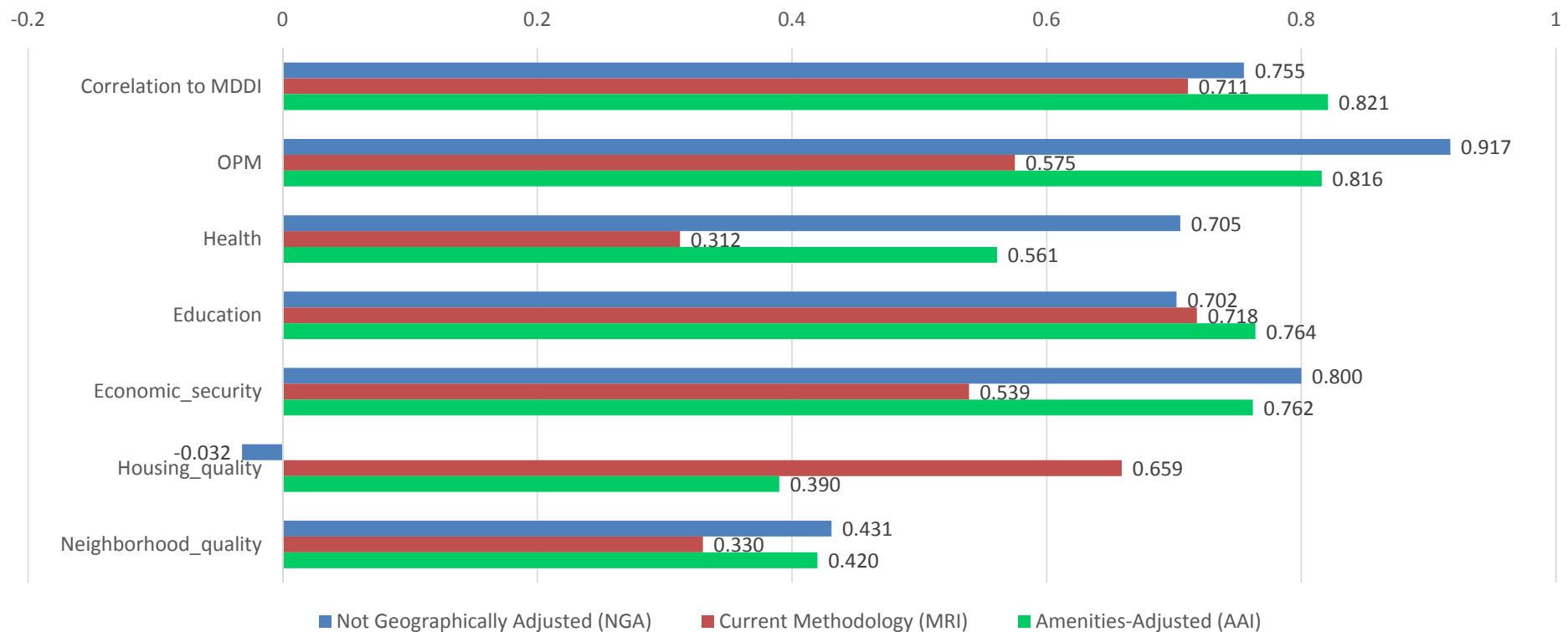
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Correlation of State Level Poverty Rates to Multi-dimensional Deprivation Index – Individual Dimensions



The Multidimensional Deprivation Index Defined	
Dimensions	How Dimensions are Measured
Standard of living	In poverty according to the official poverty measure
Education	Aged 19 or older and without a high school diploma or GED; based on head of household educational attainment for those under age 19.
Health	Predicted health status is poor. Based on cutoff value of 3 for people under age 65 and 3.5 for people age 65 and over.
Economic security	<p>At least two of the following conditions:</p> <ul style="list-style-type: none"> lacked health insurance unemployed all of the prior 12 months cumulative hours worked per week for the household was less than 35 hours and no retirement or social security income in the household.
Housing quality	<p>At least two of the following conditions:</p> <ul style="list-style-type: none"> lack complete kitchen lack complete plumbing overcrowded housing unit high cost burden.
Neighborhood quality	<p>Lived in a county with at least two of the following:</p> <ul style="list-style-type: none"> high crime poor air quality poor food environment.